REMARKS

The Office Action dated April 18, 2005, has been received and carefully noted. The following remarks are submitted as a full and complete response thereto.

Claims 1-21 are pending in the present application, and are respectfully submitted for consideration.

Claims 1-21 were rejected under 35 U.S.C. § 102(e) as allegedly anticipated by U.S. Patent No. 6,714,517 (Fawaz et al.). The Office Action took the position that Fawaz taught all the elements of claims 1-21. Applicant respectfully traverses the anticipation rejection and respectfully submits that Fawaz fails to disclose or suggest all the features of any of the presently pending claims.

Claim 1, upon which claim 2 is dependent, recites a method of prioritizing packet flows within a switch. The method includes receiving a packet at an input port. The method also includes stamping the packet with an arrival time. The method also includes classifying the packet into a flow. The flow is determined based upon at least a class of service of the packet. The method also includes assigning the packet to a queuing ring according to the flow of the packet. The method also includes maintaining a flow ratio pending within the switch based upon the flow of the packet.

Claim 3, upon which claim 4 is dependent, recites a switch for prioritizing and routing a packet through a communication system. The switch includes an input port for receiving the packet from an input source. The switch also includes a time stamp for

stamping the packet with an arrival time. The switch also includes a classification module for determining a flow of the packet. The flow is determined based upon at least a class of service of the packet. The switch also includes a queuing module for assigning the packet to a queuing ring according to the flow of the packet. The switch also includes a flow control module for maintaining a flow ratio pending within the switch based upon the flow of the packet.

Claim 5, upon which claim 6 is dependent, recites a switch for prioritizing and routing a packet through a communication system. The switch includes receiving means for receiving a packet at an input port. The switch also includes stamping means for stamping the packet with an arrival time. The switch also includes determining means for determining a flow of the packet. The flow is determined based upon at least a class of service of the packet. The switch also includes queuing means for assigning the packet to a queuing ring according to the flow of the packet. The switch also includes maintaining means for maintaining a flow ratio pending within the switch based upon the flow of the packet.

Claim 7, upon which claims 8-11 are dependent, recites a switch for prioritizing and routing a packet through a communication system. The switch includes an input port for receiving a packet from an input source and an output port for transmitting the packet to an output destination. The switch also includes a queuing module configured to determine a flow of the packet and assign the packet in a queue based upon the flow. The flow is determined based upon at least a class of service of the packet. The switch also

includes a scheduling module configured to schedule the transmission of the packet from the queue within a selected time interval before the transmission of a next outgoing packet. The switch also includes a flow control module configured to maintain a flow ratio pending within the switch based upon the flow of the packet, and to control a transmission rate of the packet from the output port based upon the flow of the packet. The switch also includes a conflict determination module configured to determine if a conflict exists when the packet is scheduled to be transmitted from the output port. The switch also includes a threshold indicator module configured to provide a threshold status based upon the flow ratio. The switch also includes a transmission module to transmit the packet from the output port according to the schedule determined by the scheduling module.

Claim 12, upon which claims 13-16 are dependent, recites a method of prioritizing packet flows. The method includes receiving a packet into an input port. The method also includes transmitting the packet from an output port. The method also includes determining a flow of the packet. The flow is determined based upon at least a class of service of the packet. The method also includes assigning the packet to a queue according to the flow of the packet. The method also includes scheduling the transmission of the packet from the queue within a selected time interval before the transmission of a next outgoing packet. The method also includes maintaining a flow ratio pending within the switch based upon the flow of the packet. The method also includes controlling a transmission rate of the packet from the output port based upon the

flow of the packet. The method also includes determining if a conflict exists when the packet is scheduled to be transmitted from the output port. The method also includes providing a threshold status based upon the flow ratio. The method also includes transmitting the packet from the output port within the selected time interval.

Claim 17, upon which claims 18-21 are dependent, recites a switch for prioritizing and routing a packet through a communication system. The switch includes receiving means for receiving a packet into an input port. The switch also includes transmitting means for transmitting the packet from an output port. The switch also includes determining means for determining a flow of the packet. The flow is determined based upon at least a class of service of the packet. The switch also includes assigning means for assigning the packet in a queue according to the flow of the packet. The switch also includes scheduling means for scheduling the transmission of the packet from the queue within a selected time interval before the transmission of a next outgoing packet. The switch also includes maintaining means for maintaining a flow ratio pending within the switch. The switch also includes controlling means for controlling a transmission rate of the packet from the output port based upon the flow of the packet. The switch also includes determining means for determining if a conflict exists when the packet is scheduled to be transmitted from the output ports. The switch also includes providing means for providing a threshold status based upon the flow ratio. The switch also includes transmitting means for transmitting the packet from the output port within the selected time interval.

As discussed in the specification, examples of the present invention provide a time based queuing mechanism that provides quality of service for time-sensitive traffic such as voice and video traffic. By adding a time stamp to each packet and each queue, and intelligently monitoring and scheduling the transmission time of the packets, examples of the present invention satisfy the stringent latency and jitter time requirements of multimedia traffic. Thus, a flexible and dynamic process manages the mixture of voice, video and best effort traffic to achieve the quality of service each traffic type requires. Applicant respectfully submits that Fawaz fails to disclose or suggest all the features of any of the presently pending claims. Thus, Fawaz fails to provide the critical and unobvious advantages discussed above.

Fawaz relates to a method and apparatus for interconnection of packet switches with guaranteed bandwidth. Fawaz describes providing a guaranteed minimum bandwidth between pairs of packet switches by defining service level agreements (SLAs). A scheduler in the node of Fawaz ensures that packets from each SLA are scheduled for transmission at a minimum data rate corresponding to the SLA. Referring to Figure 6 of Fawaz, an SLA is identified for the packet using classification information, and the packet is placed in a FIFO-type buffer 306-312 that corresponds to the SLA, forming a queue of packets for the SLA. The packets are classified according to the SLA, and are scheduled for transmission by scheduler 316. Referring to Figure 8, one queue, or an aggregate queue, is used for all SLAs. A scheduling method known as SLA early discard is used with a form of statistical multiplexing. Each SLA is assigned an integer weight,

M(k). When a packet arrives at QoS node 102 and 106, the packet is accepted into the queue only if the number of packets for the particular SLA in the queue is less than M(k). If the number of packets in the queue for the particular SLA have reached or exceeded M(k), then the packet is discarded.

Applicant submits that Fawaz fails to disclose or suggest all the features of claims 1-21. For example, applicant submits that Fawaz fails to disclose or suggest assigning the packet to a queuing ring according to the flow of the packet and maintaining a flow ratio pending within the switch based upon the flow of the packet. Applicant submits that Fawaz describes providing a minimum quality of service between a pair of switches. Using the SLAs, packets of Fawaz are classified and then placed in a buffer that corresponds to the SLA. Fawaz fails to disclose or suggest assigning the packets to a queuing ring. Further, Fawaz fails to assign the packets according to the flow of the packets. Instead, Fawaz describes classifying the packets according to a minimum level of service as determined by the SLA. Thus, applicant respectfully submits that Fawaz fails to disclose at least this feature of the claims.

Applicant submits that Fawaz also fails to disclose or suggest maintaining a flow ratio pending within the switch based upon the flow of the packet. Fawaz describes assigning a packet with a weight, M(k), that then determines if the packet is to be discarded. The weight is assigned according to the SLA, or the minimum level of bandwidth for a quality of service. Fawaz fails to maintain a flow ratio using the weights.

Instead, Fawaz just discards packets once the weights of the classified packets reach a certain level.

In contrast, claim 1 recites "assigning the packet to a queuing ring according to the flow of the packet" and "maintaining a flow ratio pending within the switch based upon the flow of the packet." Claim 3 recites "a queuing module for assigning the packet to a queuing ring according to the flow of the packet" and "a flow control module for maintaining a flow ratio pending within the switch based upon the flow of the packet." Claims 5 and 7 include the patentable features of claim 1, but are drawn to switches for prioritizing and routing a packet. Claim 12 recites "maintaining a flow ratio pending within the switch based upon the flow of the packet." Claim 17 includes the patentable features of claim 12, but is drawn to a switch for prioritizing and routing a packet. Applicant respectfully submits that Fawaz fails to disclose or suggest at least these features of claims 1-21, based on the reasons given above.

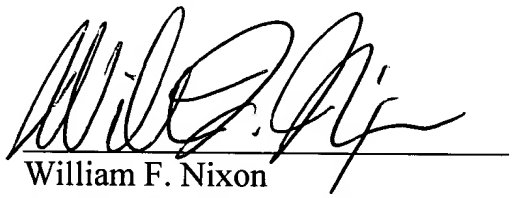
With regard to the dependent claims, applicant submits that they are allowable for at least the reasons given above, and because the dependent claims recite additional patentable subject matter. Thus, applicant respectfully submits that Fawaz fails to disclose or suggest all the features of claims 1-21. Applicant respectfully requests that the anticipation rejection be withdrawn.

Applicant further submits each of claims 1-21 recite subject matter that is neither disclosed nor suggested by Fawaz. Therefore, applicant respectfully requests that all of claims 1-21 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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